

**Natural Resources**

## **Energy Security of Turkey**

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This study analyzes whether Turkey ensures energy security, compared to some criteria in regard to various energy resources, or not.

The paper will firstly explain the meaning of energy security and its main concepts such as energy diversity and storage. Given answer to the question how energy security is perceived in some countries like USA, EU, China, and Russia, the paper takes an interest in Turkey's energy security. To determine the amount of energy dependency of Turkey, the paper concentrates on the consumption and production of various energy resources like coal, oil and natural gas in the country. Then it emphasizes over the diversification of energy suppliers and emergency policies under some energy crisis.

Energy has a vital importance in human life and is perhaps one of the most important factors in economic growth. Until 1970, energy was cheap and easily obtained compared today. After the oil crisis of 1973 this situation has been gradually changed and most of the countries started to face with energy problem. Energy security has been the main foreign policy issue for some countries. Particularly USA puts very active foreign policies into practice for energy security. Similarly EU creates some projects to secure energy for Europe. IEA puts minimum requirement such as 90 days oil stocks to prevent possible effects of oil crisis for members. Turkey seems to be a non self-sufficient country in respect to oil and natural gas according the recent data and has to import growing energy demand from other countries. Therefore, energy security should be the main problem in Turkey's energy policies. But there are some problems for securing energy in reality. Especially Turkey has diversification problems for natural gas unlike oil. Turkey has no storage facility for natural gas and also didn't perform to lay minimum 90 days oil stock down as a necessary condition of IEA up to now.

Finally we can say that Turkey will live serious energy security problems if it faces with any shortage in oil or natural gas.

## Introduction

Energy is perhaps one of the most important factors in human life and in economic growth. Until 1970, energy was cheap and easily obtained, compared today. However after the restriction of oil production that was made by OPEC in 1973, world started to face with the oil crisis and the risen oil prices that caused negative influences on the world economies such as increasing inflation rates, reduction of production and some shortages of goods and services. As a result of this energy security has been main issue for almost all governmental policies over the world.

## Energy Security Tools

Energy security can be defined as the availability of energy sources in sufficient quantities and the reasonable prices at the proper time. Disruption of energy supply may occur at any point in the energy supply chain and it can create energy crisis in a country, in a region or in the whole world. There are some factors that cause energy supply disruptions:

a. Political reasons: Since energy can be considered as a high political issue, conflicts between energy producing countries and energy consuming countries (or energy transit countries) can cause some supply disruptions.

b. Economic reasons: Sudden increase of energy price can lead to the supply disruption. For example, the last natural gas conflict between Ukraine and Russia was grounded on the disagreement between two countries on the price of natural gas.

c. Export restrictions or any embargo from producers. For example, the oil crisis in 1973 was caused by export restrictions that were made by OPEC.

d. War, terrorist attack or political instability of energy producing country: These factors may disrupt exploration, production, processing or transportation of energy. One of the vivid examples in that respect is terrorist attacks on pipeline infrastructures in Iraq.

e. Natural disasters, accidents or technical reasons: For example, hurricane Katherina, gave rise to fundamental damages to energy infrastructure and caused some disruptions of energy supply in USA.

Energy security policies can be divided into two main parts namely “short” and “long” term energy security policies. The short term energy security policies can be classified into two groups: “diversification” and “storage”. These can be analyzed in the following way:

a. Diversification: The most important policy to ensure security of energy supply is the diversification of energy source, supply countries and supply routes. Since world economy seems to be entirely dependent on oil, other sources like coal and natural are considered as diversification tools for reducing oil dependency.

The US puts very active foreign policies into practice for diversification of energy supply countries because of the fact that energy security problem is considered as a national security issue. Iraq is the main oil suppliers to the US and this seems to be the most important reason of Iraqi War. Also European Union has been creating some diversification projects to secure energy for Europe and in order to satisfy this goal EU formed the INOGATE (Interstate Oil and Gas Transport to Europe) program. The Most important project of INOGATE is Trans-European Networks Project. This project promotes the regional integration of the pipeline systems and facilitates the transport of oil and gas from Caspian region to the European market. Russia is seen as a good example in that respect. As it is known Russia is the largest gas exporter country in the world and it tries to diversify its natural gas export pipelines routes to reduce its energy export dependency on Ukraine (Socor, 2006).<sup>1</sup>

<sup>1</sup> Ukraine is the main transit country for sending Russian gas to Europe's markets and currently 80% of Russian gas flows from Ukraine to Europe. Russia

b. Storage: The second short term tool for securing the energy supply is the storage policy. After the first oil crisis, International Energy Agency (IEA) put some minimum storage policies to reduce influences of unexpected rising of oil price or disruption of oil supply. The minimum quantity required for the oil stock, in time scale, is 90 days. Today oil stocks of the members of IEA are approximately 4 billion barrels and 1.4 billion of these are under the direct control of member governments and the rest are in commercial stocks (IEA, 2005:1).

Although the IEA has not defined certain minimum requirements of gas storage as in the case of oil, those countries who use gas more have been establishing some storage facilities inside or outside their countries. Storage capacities of some countries for natural gas are as follows: Austria (32 %), France (26%), Germany (22%), Italy (22%) (World Bank, 2005: 2).

### **Turkish Energy Outlook**

Although Turkey has a close geography to rich oil and natural gas reserves in the Middle East and Caspian region, Turkey's proven oil and gas reserves seem to be very low. Like many countries, Turkey has large coal and lignite resources. But Turkish coal and lignite have low calorific and high polluted values.

Primary energy production of Turkey is insufficient for the Turkey's energy requirements. The quantity of Turkish primary energy production was nearly 23,4 mtoe whereas consumption was approximately 79 mtoe and the amount of imported energy was nearly 55,6 mtoe in 2003. Turkey's oil consumption is 37,7% of total primary energy needs and nearly 92,5 % of it is imported. Also, natural gas provides 22,4 % of total primary energy demand and 97,4% of it is imported. Turkey needs to import gas from other countries in order to satisfy growing energy demands. This, eventually, brings Turkey to be entirely dependent on imported oil, and natural gas.

Turkey's growing energy requirements give rise to its dependency in respect to energy. As the time passes it seems that Turkey's dependency in that respect goes to increase more. For instance Turkey's energy dependency has been increased to 70,1 % in 2003 from 45,8 % in 1980. It is forecasted that Turkey's energy dependency will reach to 76,5 % in 2020 (ETKB 1985 and ETKB 2002). The growing import dependency brings, indeed, serious problems for a country in respect to its cost and imported quantity. For example the cost of energy import increased from 13,4 billion dollars to 20.5 dollars in one year between 2004 and 2005. In other words we can say that the ratio of energy cost to the total import increased from 14, 2 % in 2004 to 17, 6 % in 2005. The main reason behind this is the rise of oil prices and changes in the Euro/USD rate.

The consequence of growing import dependency is heavy. For example the cost of energy import increased from 13,4 billion dollars or The increasing trend in energy dependency requires securing of energy supply for Turkey. Turkey actually imports coal from various countries and there seems, at current, no risk of over-dependency on coal. Crude oil has been coming from mainly Iran, Libya, Saudi Arabia and Russia and again Turkey is not seen to be under over-dependency on any single country (DPT, 2001: 89). But Turkey has a serious diversification problem in respect to the natural gas. Actually Russia seems to be the main supplier country for Turkey with 66 % of the Turkey's natural gas consumption in 2005. Turkey's dependency on Russian natural gas will continue to increase up to 69,2 % in 2020 (Çaha, 2003 : 200).

In order to improve the energy security and reduce the effects of energy crisis, Turkey should set up strategic reserves for oil and natural gas. But Turkey has no policies to reducing effects of supply distributions. For example, Turkey has no storage facility for natural gas nor it has any storage for oil. National Oil and Natural Gas Company of Turkey (TPAO) was actually planning to operate the Silivri Underground Gas Storage Facility by the mid-2006 but it seems that there will be a delay until the end of 2006. Moreover, Salt Lake Underground Storage Gas Facility is also in the agenda of the government and is planned to be completed by 2015.<sup>2</sup> The storage

<sup>2</sup> World Bank support the construction of The Salt Lake Underground Storage Gas System

capacity will reach to 6 % of the total consumption after the Silivri project.<sup>3</sup> However, it should be noted that even this will not be sufficient when Turkey's long-term goals are considered.<sup>4</sup> Turkey should develop new energy policies to promote natural gas storage facilities.

Although there is no diversification of supply problem for oil Turkey has similar storage problem for oil. According to international agreements, Turkey should perform to lay away minimum 90 days oil stock but there seems, actually, no completed oil storage facility. There are some problems about establishing strategic oil stocks. First, although according to international agreements about minimum 90 days oil stock rules, The Petroleum Market Law requires only 20 days stockpiling. Also there are some complicated items about holding of stocks whether crude oil or petroleum products.

### **Conclusion**

Turkey should put in practice some effective policies to improve energy efficiency. This seems to be too fundamental and significant to reduce consumption of energy. To prevent rising trend in dependency on imported energy sources and to satisfy increasing energy demand, Turkey should restructure coal sector and encourage to using clean coal technologies that will help to improve indigenous coal reserves. Only, in such a way the production of energy and consumption of energy gap will be closed down. Otherwise one can say that Turkey will live serious energy security problems in case if it faces with any shortage in oil or natural gas.

<sup>3</sup> 6% of the total consumption will be nearly 2. 4 billion m.<sup>3</sup>

<sup>4</sup> Turkey's goal for storage capacity is ten percentage of annual consumption.

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